



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/617,146

07/10/2003

Anca Faur-Ghenciu

GP-302809

1398

23368

7590

11/16/2009

DINSMORE & SHOHL LLP
FIFTH THIRD CENTER, ONE SOUTH MAIN STREET
SUITE 1300
DAYTON, OH 45402-2023

EXAMINER

HANDAL, KAITLY V

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

11/16/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/617,146	Applicant(s) FAUR-GHENCIU ET AL.	
	Examiner KAITY V. HANDAL	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,12,13,16,24,25,27,29,36,37,42,44,45,51,53,55 and 60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-2, 4, 12-13, 16, 24-25, 27, 29, 36-37, 42, 44-45, 51, 53, 55, 60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/12/2009 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-4, 7-14, 16, 18-27, 29, 31-38, 40-42, 44-46, 48-49, 51, 53, 55-58, 60 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claimed range of the dopant being between about 0.1% to about 0.5% is not supported in the instant specification; the dopant range in the specification is 0.1% to 1.0%..

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-4, 7-14, 16, 18-27, 29, 31-38, 40-42, 44-46, 48-49, 51, 53, 55-58, 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nunan (US 6,040,265).

With respect to claims 1-2, 4, 12-13, 16, 24-25, 27, 29, 36-37, 42, 44-45, 51, 53, 55, 60, Nunan teaches an apparatus for reducing an amount of carbon monoxide in process gas wherein the catalyst is a ceria based catalyst which promotes water gas shift reactions (col. 1, lines 43-56), the catalyst system comprising a noble metal/(Pt or Pd) (col. 10, line 65); a mixed metal oxide support consisting essentially of cerium oxide and zirconium oxide, wherein cerium oxide is present in an amount from about 45% to about 90% by weight of mixed metal oxide and zirconium/lanthanum oxide is present in amount from about 10% to 55% by weight of mixed metal oxide (col. 10, lines 64 col. 11, lines 1-5); and passing the process fuel gas through the water gas shift converter in effective contact with the high activity water gas shift catalyst system and converting at least 50% of the carbon monoxide in the process fuel gas into carbon dioxide and hydrogen by a water gas shift reaction over a temperature range of about 300°C to about 450°C/(400°C to about 575°C) (see Figure 15).

Nunan does teach that his catalyst is for reducing an amount of carbon monoxide in process gas wherein the catalyst is a ceria based catalyst which promotes water

Art Unit: 1795

gas shift reactions (col. 1, lines 43-56). Therefore, a water gas shift reaction does take place in Nunan's catalyst system. Therefore, it would be obvious to one having ordinary skill in the art to try placing Nunan's catalyst system in a "water gas shift reactor", or any "reactor", and pass there through a process gas stream as opposed to an exhaust stream for the purpose of achieving an entirely expected result – which is reducing carbon monoxide. Thereby, one skilled in the art would merely place a catalyst system known to achieve an expected result in a specific known reactor/reaction conditions in an effort to try achieving the expected results taught in the prior art of Nunan. Nunan's disclosure obviates to one of ordinary skill in the art to try using his catalyst system to achieve the expected result of reducing carbon monoxide in a gas stream. See KSR - Example D. Furthermore, Nunan's catalyst is the same as that instantly claimed and therefore will perform as such.

Nunan further teaches wherein the promoter is present in an amount of between 1% and about 20% by weight of total catalyst (col. 14, lines 23-25). Even though the weight percent of the promoter in Nunan is not exactly the same as the claimed range of 0.1 to 0.5, the ends of the two ranges are very close (meaning that 0.5 is very close to 1.0) specially that the claim language explicitly includes "about 0.1 % and about 0.5%"; therefore, broadly interpreted, the 1% of Nunan is very close to the claimed "about 0.5". Therefore, the claimed range is not considered to confer patentability to the claims. As the reactor cost of construction and efficiency of operation are variable(s) that can be modified, among others, by adjusting weight percentage of the catalyst components such as that of the promoter with said

Art Unit: 1795

construction cost and operating efficiency both improving as the weight percentage of the catalyst components are optimized, the weight percentage of the promoter used would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed weight percentage of the promoter cannot be considered critical. Accordingly, one of ordinary skill in the art at the time of the invention was made would have optimized, by routine experimentation, the weight percentage of the promoter in the apparatus of Nunan to obtain the desired balance between the construction cost and the operation efficiency (*In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

With respect to claims 3, 14, 26, 38, 46, 56, Nunan further teaches wherein the noble metal/(group VIII) is present in an amount of between about 0.01% to about 4% by weight of total catalyst (col. 13, lines 40-43).

With respect to claims 7, 18-19, 31, 40, 48, 57, Nunan further teaches wherein the mixed metal oxide support further comprises a support dopant/(additional promoter) selected from lanthanum (col. 14, lines 8-15).

With respect to claims 8, 20, 32, Nunan further teaches wherein the support dopant/(additional promoter) is in the form of a metal oxide (col. 14, lines 8-21).

Art Unit: 1795

With respect to claims 9, 21, 33, 41, 49, 58, Nunan further teaches wherein the support dopant/(additional promoter) is present in an amount of between about 1% and about 20% by weight of mixed metal oxide (col. 14, lines 8-25).

With respect to claim 10-11, 22-23, 34-35, Nunan further teaches wherein the process fuel gas passes through the water gas shift at a temperature of about 225°C (col. 15, lines 53-57).

The options in Nunan as to the various catalyst/promoter/dopant material groups are deemed obvious to one having skill in the art to choose from these options.

Response to Arguments

6. Prior Art

Applicant's arguments filed 10/12/2009 have been fully considered but they are not persuasive.

a. On page 11, first paragraph, Applicant argues that Nunan does not teach or suggest that his catalyst can be placed in a water gas shift converter and that Nunan teaches a three way catalyst in which three types of reactions take place that are different from a water gas shift reaction.

Examiner respectfully points out that Nunan does teach that his catalyst is for reducing an amount of carbon monoxide in process gas wherein the catalyst is a ceria based catalyst which promotes water gas shift reactions (col. 1, lines 43-56). Therefore, a water gas shift reaction does take place in Nunan's catalyst

Art Unit: 1795

system in addition to the reactions known to take place in a three-way catalyst.

Therefore, it would be obvious to one having ordinary skill in the art to try placing Nunan's catalyst system in a "water gas shift reactor", or any "reactor", and pass there through a process gas stream, including an exhaust stream, for the purpose of achieving an entirely expected result – which is reducing carbon monoxide. Furthermore, the fact that the instant claim reads on a method for reducing an amount of carbon monoxide in process fuel gas in a water gas shift converter, the claim language does not preclude treating exhaust gas as in Nunan since exhaust gas can be considered "a process fuel gas", for example in a burner. Similarly, since Nunan's catalyst is the same as that instantly claimed and will therefore perform as such, and since a water gas shift reaction is taking place due to the presence of ceria; placing the catalyst system of Nunan in a catalytic converter or in a shift reactor or in any reactor, the catalyst system will continue to perform in the same fashion - effecting a water gas shift reaction. Thereby, one skilled in the art would merely place a catalyst system known to achieve an expected result in a specific known reactor/reaction conditions in a effort to try achieving the expected results taught in the prior art of Nunan. Nunan's disclosure obviates to one of ordinary skill in the art to try using his catalyst system to achieve the expected result of reducing carbon monoxide in a gas stream. See KSR - Example D. Furthermore, Nunan's catalyst is the same as that instantly claimed and therefore will perform as such.

The claims use “comprising” which is open transitional language and does not exclude a reference from having more elements (reactions) than those recited in the instant claims. MPEP 2111.03 [R-3]. The claimed transitional term “comprising” permits the inclusion of other steps, elements, or materials, including both, those disclosed but not claimed by applicant and those neither disclosed nor contemplated by applicant. See *In re Baxter*, 656 F.2d 679, 686, 210 USPQ 795, 802 (CCPA 1981).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAITLY V. HANDAL whose telephone number is (571)272-8520. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1795

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. V. H./
Examiner, Art Unit 1795
/Jennifer K. Michener/

11/5/2009

Supervisory Patent Examiner, Art Unit 1795